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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/499,014 02/04/00 KIM

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022917  
MOTOROLA, INC.  
1303 EAST ALGONQUIN ROAD  
IL01/3RD  
SCHAUMBURG IL 60196

WM02/0515

EXAMINER

TRAN, K

ART UNIT

PAPER NUMBER

2631

DATE MAILED:

05/15/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/499,014

Applicant(s)

KIM ET AL.

Examiner

KHAI TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 February 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Objections*

1. Claims 2 and 10 are objected to because of the following informalities:

Regarding claim 1, line 2, the term "a digital modem" is repeatedly used in line 1 as set forth in line 2 of claim 10.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, Applicant recites a plurality of elements, such as a digital modem, local analog loop, a center office, analog modem, a digital network without articulating how each element functions with each other, specifically the analog modem.

Regarding claim 2, line 1, the term "its" is not clear to what it refers.

Regarding claim 4, line 3, the term "the equivalence classes" lacks antecedent basis.

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Regarding claim 6, lines 4-5, the term "the analog modem transmitter" lacks antecedent basis.

Regarding claim 10, Applicant recites a plurality of elements, such as a digital modem, local analog loop, a center office, analog modem, a digital network without articulating how each element functions with each other, specifically the analog modem.

Claims 3, 5, 7-9, and 11 are rejected by virtue of their dependency.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olafsson (U.S. Pat. 6,163,570).

Regarding claim 1, Olafsson discloses a PCM modem system including an analog modem, a digital modem, a local analog loop, a central office (see Figure 1), a method for controlling the transmit power of the analog modem, comprising the steps of: detecting the transmit power level of the analog modem (col.2, lines 1-55). Olafsson does not explicitly disclose a step of adjusting the transmit power level of the analog modem in accordance with the difference between the detected transmit power level and a desired transmit power level. However; Olafsson discloses that after the appropriate signal point constellations are selected, the total average transmit power level may be computed by the analog modem to ensure that the transmit power of the constellations set does not exceed the maximum transmit power limit by comparing a computed transmit power with a transmit power limit to determine whether the computer transmit power is less than or equal to the transmit power limit (col. 2, lines 1-28, and col.6, lines 47-54). Therefore, in order to verify the transmit power level, one of ordinary skill in the art would compare the transmit power level with the desired power level in order to adjust the transmit power level sent from one modem to another modem device (see col.2, lines 61-63, col.3, lines 6-30, and a comparator 224) in order

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to limit the transmit power levels from the one modem to another modem and comply with the transmit power regulations.

Regarding claims 2-3, Olafsson also discloses that a transmit power verification procedure and scheme enables and accurately verifies the transmit power of a signal point constellation set regardless of the computational resolution of the components used in the two modem devices (col.2, line 58 to col.3, line 8). In order to verify the transmit power levels sent from the one modem to another modem, therefore, the transmit power is inherently set by either one of the modem devices (i.e., the analog modem or the digital modem).

Regarding claim 4, Olafsson discloses the PCM modem system adjusting the power level of the analog modem by transmitting mapping parameters including the equivalence classes used in the analog modem and wherein the transmit power level is proportional to the number of equivalence classes (col.7 ,lines 41-59, and col.8, lines 24-45, i.e., the modem 202 may lower the transmit power limit to ensure that its computational precision does not cause an erroneous acceptance or rejection of training points or a signal point constellation set designed by modem 204).

Regarding claim 5, Olafsson discloses wherein the digital modem sets the analog modem transmit power by changing the number of equivalence classes employed (col.7, line 42 to col.8, line 10, i.e., a power calculation element 242 computes the total average transmit power of the signal point constellations in

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accordance with the designated power formula 240 and in a similar manner as transmit power calculation element 222 (resident at modem 202), also see col.10, line 58 to col.11, line 3)).

Regarding claim 6, Olafsson further discloses wherein the digital modem estimates the transmit power of the analog modem during a startup mode (col.8, lines 11-45).

Regarding claim 7, Olafsson discloses the step of transmitting the difference between the detected power level and the desired power level to the digital modem for use by the digital in changing the number of equivalence classes employed, thus to adjust level of the analog modem transmitter (col.7 ,lines 41-59, and col.8, lines 24-45)

Regarding claim 8, Olafsson also discloses wherein the adjustment of the transmit power level of the analog modem is such as to maintain the transmit power level within FCC set limits (col.5, lines 23-35, i.e., the transmit power level with a regulatory limit -12 dBm0 FCC limit).

Regarding claim 9, Olafsson does not explicitly disclose that the adjusted transmit power level at the analog modem optimizes the PCM modem system by minimizing echo power to minimize noise components due to echo cancellation and by minimizing non-linearities and downstream performance degradation. However, Olafsson discloses that the transmit power level is adjusted at regulatory limit, such as

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the -12 dBm0 FCC (col.8, lines 24-45). Therefore, the adjustment of the transmit power level inherently minimizes the noise signal and also reduces the error signal.

Claims 10-11 are similar to claims 1-3. Therefore, claims 10-11 are rejected under a similar rationale.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Goldstein (U.S. Pat. 5,265,151) discloses a method of improving modem performance by controlling transmitted power of modem, and modem implementing the same.

Goodson et al (U.S. Pat. 5,844,940) disclose a method and an apparatus for determining transmit power levels for data transmission and reception.

Betts (U.S. Pat. 5,991,278) discloses an asymmetric modem communication system and method.

Dagdeviren (U.S. Pat. 6,195,384) discloses a method and an apparatus compensating for effects of digital loss insertion in signal transmission between modems.

Kim (U.S. Pat. 6,201,842) discloses a device and a method for detecting PCM upstream digital impairments in a communication network.



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6. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 308-9051, (for formal communications intended for entry)

**or:**

(703) 308-6743, (for informal or draft communications, please label  
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the  
examiner should be directed to **Khai Tran** whose telephone number is **(703) 305-1876**.  
The examiner can normally be reached on Monday-Thursday from 9:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's  
supervisor, **Chi Pham**, can be reached on **(703) 305-4378**.

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the Group receptionist whose telephone number is  
(703) 305-4900.

  
*Khai Tran*  
*Patent Examiner*

*KT*  
*May 9, 2001*